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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,549	06/30/2000	Gurumukh S. Tiwana	CISCP151	2362

22434 7590 09/09/2004

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EXAMINER

DUONG, THOMAS

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/608,549

Applicant(s)

TIWANA ET AL.

Examiner

Thomas Duong

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed on June 7, 2004. The amendment filed on June 7, 2004 has been entered and made of record. *Claims 1-8 and 10-41* are presented for further consideration and examination.

Response to Argument

2. The Applicants' arguments and amendments filed on June 7, 2004 have been fully considered, but they are not persuasive.
3. With regard to claims 1, 18, 25 and 41, the Applicants point out that:
 - *In other words, when a new node is added, the data is only redistributed once from the existing nodes to the new node. That is, the Li fails to teach or suggest periodically monitoring the load of the new node and (i) when it is determined (during this periodic monitoring) that the new node is underloaded, assigning buckets and (ii) when it is determined (during this periodic monitoring) that the new node is overloaded, shedding buckets from such new node, in the manner claimed. In other words, Li fails to teach or suggest periodically determining the load of the new node and then taking action based on this periodic determination, e.g., by assigning buckets when it is periodically determined that the new node is underloaded, in the manner claimed. In other words, Li fails to teach or suggest periodically adjusting the new node's load based on a periodic monitoring of such load, in the manner claimed.*

However, the Examiner finds that the Applicants' arguments are not persuasive and maintains that the Li reference does disclose,

- *periodically determining a load of the new cache system;* (Li, col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9; Li teaches that "in the quiescent-mode operation, load balancing is the primary goal" implying that is very important to maintain a balanced work load among the nodes. Furthermore, it is well known in the art that this can be achieved by actively or periodically monitoring the system's work load and "distribute the work load evenly" to maintain a high level of operation or availability)

In summary, the Examiner maintains that Li does disclose a step that implies actively or periodically monitoring the system's work load and "distribute the work load evenly" to maintain a high level of operation or availability. Furthermore, Dreszer teaches "periodically reorganize/trim the size queue and attempt to release file system cache buffers back to the system" (Dreszer, col.7, lines 61-65; col.12, lines 49-67; modules 70-72, fig.4). Therefore, the Applicants still failed to clearly disclose the novelty of the invention and identify specific limitation, which would define patentable distinction over prior art.

4. With regard to claims 2-8, 10-17, 19-24 and 26-40, they are rejected at least by virtual of their dependency on the independent claims and by other reasons set forth in the previous office action (Paper No.6). Accordingly, rejections for *claims 2-8, 10-17, 19-24 and 26-40* are presented as below:

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-8 and 10-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US005634125) and further in view of Dreszer (US006442661B1).
7. With regard to claims 1, 18, 25 and 41, Li reference discloses,
 - *a) when a new cache system starts up in a cache cluster having a plurality of total buckets, determining a full bucket allocation for the new cache system;* (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)
 - *b) periodically determining a load of the new cache system;* (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)
 - *c) when it is determined that the new cache system is underloaded,* (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)
 - *d) when it is determined that the new cache system is overerloaded,* (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)

However, Li reference does not teach,

- *slowly assigning a portion of the full bucket allocation or a portion of previously shed buckets to the new cache system unless the full bucket allocation has already been assigned to the new cache system; and*
- *shedding a portion of the buckets previously assigned to the new cache system.*

Dreszer teaches,

- *slowly assigning a portion of the full bucket allocation or a portion of previously shed buckets to the new cache system unless the full bucket allocation has already been assigned to the new cache system; and* (Dreszer, abstract; col.2, line 65 – col.3, line 16; col.3, lines 49-60; col.4, line 49 – col.5, line 8; col.5, lines 42-65; col.5, line 66 – col.6, line 8; col.6, lines 9-31; col.6, line 55 – col.7, line 15; col.8, lines 14-25; fig.10-12; col.7, lines 61-65; col.12, lines 49-67; modules 70-72, fig.4)
- *shedding a portion of the buckets previously assigned to the new cache system.* (Dreszer, abstract; col.2, line 65 – col.3, line 16; col.3, lines 49-60; col.4, line 49 – col.5, line 8; col.5, lines 42-65; col.5, line 66 – col.6, line 8; col.6, lines 9-31; col.6, line 55 – col.7, line 15; col.8, lines 14-25; fig.10-12; col.7, lines 61-65; col.12, lines 49-67; modules 70-72, fig.4)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Dreszer reference with Li reference to provide rapid memory allocation and de-allocation, reduced memory fragmentation, maximizes the amount of memory available for a cache (e.g., file system I/O buffers) while optimizing the amount of memory available for other uses, and manages competition for different memory uses by system self-adaptation to different usage levels across different network environments and over time within one network environment, including self-tuning to optimize performance to a variety of environments and dynamic conditions.

8. With regard to claims 2, 7-8, 10, 12-14, 19, 24, 26, 31-33 and 35-37, Li and Dreszer references disclose the invention substantially as claimed,
See *claims 1, 18 and 25* rejection as detailed above.

Furthermore, Li reference discloses,

- *assigning the full bucket allocation to the new cache system when the cache cluster is operating at a maximum load (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)*

9. With regard to claims 3, 20 and 27, Li and Dreszer references disclose the invention substantially as claimed,

See *claims 1, 18 and 25* rejection as detailed above.

Furthermore, Dreszer reference discloses,

- *wherein slowing assigning a portion of the full bucket allocation to the new cache comprises: initially assigning a portion of the full bucket allocation to the new cache system; when no buckets have been previously shed, assigning a portion of the unassigned buckets to the new cache system; and when buckets have been previously shed, assigning a portion of a number of buckets that were previously shed from the new cache system. (Dreszer, abstract; col.2, line 65 – col.3, line 16; col.3, lines 49-60; col.4, line 49 – col.5, line 8; col.5, lines 42-65; col.5, line 66 – col.6, line 8; col.6, lines 9-31; col.6, line 55 – col.7, line 15; col.8, lines 14-25; fig.10-12)*

10. With regard to claims 4-6, 11, 21-22, 28-30 and 34, Li and Dreszer references disclose the invention substantially as claimed,

See *claims 1, 18 and 25* rejection as detailed above.

Furthermore, Dreszer reference discloses,

- *wherein shedding a portion of tree buckets previously assigned to the new cache comprises: when no buckets have been previously shed, periodically shedding a*

portion of the assigned buckets from the new cache system; when buckets have been previously shed, periodically shedding a portion of a number of buckets that were previously shed from the new cache system; (Dreszer, abstract; col.2, line 65 – col.3, line 16; col.3, lines 49-60; col.4, line 49 – col.5, line 8; col.5, lines 42-65; col.5, line 66 – col.6, line 8; col.6, lines 9-31; col.6, line 55 – col.7, line 15; col.8, lines 14-25; fig.10-12; col.7, lines 61-65; col.12, lines 49-67; modules 70-72, fig.4)

11. With regard to claims 15-17, 23 and 38-40, Li and Dreszer references disclose the invention substantially as claimed,

See *claims 4, 21 and 28* rejection as detailed above.

Furthermore, Li reference discloses,

- *wherein shedding a portion of tree buckets previously assigned to the new cache comprises: receiving load information from the new cache, the load information indicating whether the new cache system is overloaded; and using the load information to determine whether the new cache is overloaded. (Li, abstract; col.1, lines 18-37, lines 38-54; col.2, lines 29-44, lines 48-61; col.6, lines 18-51; col.6, line 52 - col.7, line 53; col.9, lines 4-21; fig.6A; fig.9)*

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas Duong whose telephone number is 703/305-1886 or 571/272-3911 (after 11/01/2004). The examiner can normally be reached on M-F 7:30AM - 4:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Wiley can be reached on 703/308-5221 or 571/272-3923 (after

11/01/2004). The fax phone numbers for the organization where this application or proceeding is assigned are 703/872-9306 for regular communications and 703/872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/305-3900 or 571/272-2100 (after 11/01/2004).

Thomas Duong (AU2143)

September 7, 2004


RUPAL DHARIA
SUPERVISORY PATENT EXAMINER